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IC - A23G3/00

IN - CHANG Y; KWEON I

MC - D03-E05

PA - (LOTT-N) LOTTE CONFECTIONERY CO

PN - KR9106095 B 19910813 DW199245 A23G3/00 000pp

PR - KR19890002729 19890306

XA - C1992-165023

XIC - A23G-003/00

AB - KR9106095 A soft candy having double layer in the outer cover and centre is prepd. 19 kg of sucrose, 49 kg starch syrup, 40 kg condensed milk, 7 kg hardened oil, 100 kg emulsifier, etc. are dissolved in water and mixed to obtain mixed soln. (I). The (I) is concentrated to 6-9% moisture content at 112-125 deg.C to obtain the soft candy for the outer cover (II) and concentrated to 10-15% moisture content at 112-125 deg.C and cooled to obtain the soft candy for the centre (III). The (II) is coated with the (III), formed in the extruder, and cooled to 20-25 deg.C to obtain the final product. The soft candy has a soft sense of chewing.

IW - SOFT CANDY MANUFACTURE SUCROSE STARCH SYRUP CONDENSATION MILK OIL EMULSION WATER

IKW - SOFT CANDY MANUFACTURE SUCROSE STARCH SYRUP CONDENSATION MILK OIL EMULSION WATER

INW - CHANG Y; KWEON I

NC - 001

OPD - 1989-03-06

ORD - 1991-08-13

PAW - (LOTT-N) LOTTE CONFECTIONERY CO

TI - Soft candy mfr. - using sucrose, starch syrup, condensed milk, oil, emulsifier, water, etc.

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US 4097616 A

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(54) A method of producing soft candies

(57) There is disclosed a method of producing a soft candy showing remarkably reduced or practically no adhesion to teeth. According to the method, a saccharide mixture containing sugar and glucose syrup is thermally treated for adjusting its moisture content to not higher than 10% by weight, and then an oil or fat is added to the concentrate of the saccharide mixture in an amount of not less than 2.0% by weight and not more than 30.0% by weight, followed by sufficient mixing.

GB 2 280 350 A

A method of producing soft candies

5 The present invention relates to a method of producing a soft candy showing remarkably reduced or practically no adhesion to teeth.

10 The soft candy is one of sugar confectionery much favoured by children and women, but has such a disadvantage that it tends to adhere to teeth.

Conventional techniques for preventing adhesion of the soft candy to teeth are generally classified into two technical means.

15 The first means is a method wherein an oil or fat is added into a composition for the candy [Jap. Pat. No. Hei 4 (A.D. 1992) - 84858(A); R. Lee and E. B. Jackson, "Sugar Confectionery and Chocolate Manufacture", pages 170 and 196; and E. B. Jackson, "Sugar Confectionery Manufacture", page 127 (1990)]. These publications only refer to an addition of the oil or fat in an increased amount to prevent the adhesion of the soft candy to
20 teeth, but there are given no disclosures as to the kind of oil or fat, and the time when it is to be added to the components in the process for the production of the soft candy. Therefore, it may be said that the literature only suggests a fact that an O/W type emulsification is preferable for the purpose.

25 In general, a vegetable oil or fat is selected [Jap. Pat. No. Sho 57 (A.D. 1982)] and it is added together with sugar, glucose or starch syrup, condensed milk and others, and the mixture obtained is homogenized under a condition of very high water content (more than 15%), and then the homogenate is thermally concentrated to
30 adjust its water content to a predetermined level [said Jap. Pat. No. Hei 4 (A.D. 1992) - 84858(A)].

35 The second means is a method wherein a polyglyceride as emulsifying agent is added for preventing the adhesion to teeth [Jap. Pat. No. Hei 5 (A.D. 1993) - 7459(A)]. It has been known, however, that the undesirable influence on the taste of products appears, when the amount of emulsifying agent for increasing the effect on inhibition of adhesion. Therefore, use of this means is

restricted.

Therefore, the inventors have energetically studied and investigated as to conditions for adding an oil or fat to prepare a soft candy showing remarkably reduced or practically no adhesion to teeth, by taking an emulsification mechanism of raw materials therefor into consideration, and found that the adhesion to teeth can be remarkably prevented by the means wherein a saccharide mixture containing mainly sugar and glucose syrup is concentrated under heating to make its water content not higher than 10% by weight, and then an oil or fat is added therein under stirring to prepare a concentrate for soft candies.

It is preferable to add the oil or fat in an amount not less than 2.0% by weight and not more than 30.0% by weight. If the amount is less than the lower limit, the adhesion-inhibition effect becomes low, and if more than the upper limit, a configuration keeping ability of the final soft candy product remarkably decreases and exudation of the oil or fat on surface shall be observed during preservation of the product.

If an emulsifying agent is also added in an amount of 1/50 % by weight based on the oil or fat, followed by a mechanical homogenizing treatment, such multiple-effects can be provided that the final product does not show any adhesion to teeth and no exudation of the oil or fat on surface shall be observed during preservation of the product.

As the oil or fat, such a vegetable one is selected, as a neutral hardened oil mainly containing rapeseed oil and corn oil, palm oil or palm kernel oil, but other vegetable oil and tallow may be employed. Also, lecithin, sugar fatty acid ester, sorbitan fatty acid ester, polyglycerine fatty acid ester or the like may be listed as the emulsifying agent.

The invention will now be further explained in more detail with reference to Examples, Reference Examples and Evaluation Test.

Example 1

A base mixture (consisting of sugar, glucose syrup and condensed

milk in amounts given in following Table 1) was charged into 3 open-pans prior to heating thereof. Each of the base mixtures (Tests 1, 2 and 3) was heated under stirring until 115°C for Test 1, 113°C for Test 2 and 111°C for Test 3, respectively, so that its final remaining water or moisture content was adjusted to the value as shown in following Table 2.

Each of the concentrates in the concerned open-pan for Tests 1, 2 and 3 was transferred into a Sigma-type mixing kneader, to which a conventional vegetable oil or fat and lecithin in amounts also given in Table 1 were added and sufficiently mixed with the base mixture.

The resulting mixture in the concerned mixing kneader for Test 1 was cooled as it was, thereby obtaining a soft candy having final moisture content of 9.4% by weight.

Each of the mixtures in the mixing kneader for Test 2 and 3 was re-transferred into an associated open-pan and heated until 115°C to further adjust moisture contents thereof and then cooled to obtain soft candies, each having final moisture content of 9.4% by weight, respectively.

Each of the sample products (Tests 1 - 3) having the same moisture content as 9.4% by weight were subjected to an Evaluation Test. Results thereof are shown in Table 4, given later. The products were held in a storage, but no exudation of oil component to its surface could be observed.

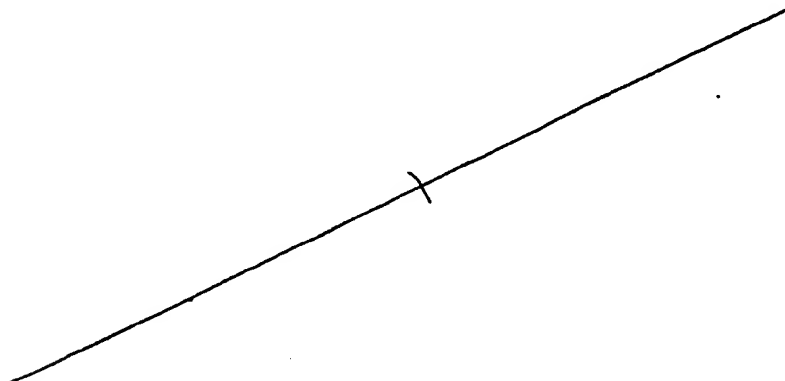


Table 1

Raw materials	% by weight
<u>Base mixture</u> :	
Sugar	36.4
Glucose syrup	38.5
Condensed milk	20.0
<u>Fats</u> :	
Vegetable oil (*)	5.0
Lecithin	0.1
Total	100.0

In Table 1. * : neutral hardened oil mainly containing rapeseed oil and corn oil.

Table 2

	Test 1	Test 2	Test 3
Moisture content (% by weight)	8.0	10.0	12.0

Reference Example 1

A base mixture having the same composition as in Table 1 (Example 1) was charged into an open-pan prior to heating thereof, and sufficiently mixed. It was confirmed that the moisture content of the resulting mixture was 16% by weight. To the mixture obtained, a vegetable oil as in Example 1 and emulsifying agent were added followed by sufficient mixing. The homogeneous mixture thus obtained was then concentrated under heating.

When the temperature of concentrate reached 115°C, the heating was stopped, and the concentrate was transferred to the Sigma-type mixing kneader, where the concentrate was kneaded for same

period of time as in Example 1. Thereafter, the kneaded concentrate was cooled to obtain a soft candy having moisture content of 9.4% by weight.

The above method is corresponding to conventional ones for producing soft candies.

The soft candy obtained was subjected to an Evaluation Test as in Example 1. Results thereof are shown in Table 4, given later.

Example 2

A base mixture (consisting of sugar, millet jelly and condensed milk in amounts given in following Table 3) was charged into 4 open-pans prior to heating thereof. Each of the base mixtures (Tests 4, 5, 6 and 7) was heated to 118°C for Test 4, 117°C for Test 5, 110°C for Test 6, and 109°C for Test 7, respectively, so that its final remaining moisture content was adjusted to be less than 10.0% by weight.

Each of the concentrates in the concerned open-pan for Tests 4 - 7 was transferred into the Sigma-type mixing kneader, to which a vegetable oil and lecithin in amounts given in Table 3 were added and sufficiently mixed with the base mixture.

Each of the mixtures obtained in the mixing kneader for Tests 4 - 7 was cooled as it was, thereby obtained a soft candy, each having final moisture content of 9.4% by weight.

On each of the soft candies under preservation, there was not observed any exudation of oil on surface for each product for Tests 4 - 6, while it was observed on the product for Test 7. Therefore, the product for Test 7 was excluded from an Evaluation Test. Results of the Evaluation Test are shown in Table 4, given later.

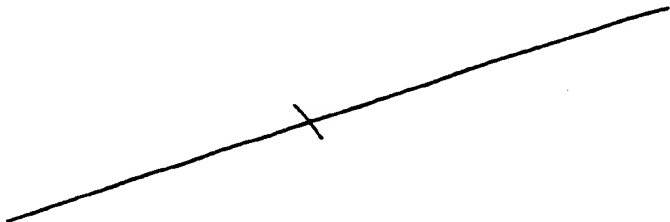


Table 3

Raw material	Test 4	Test 5	Test 6	Test 7
<u>Base mixture :</u>				
Sugar	39.4	38.4	23.4	22.3
Glucose syrup	39.5	39.5	26.0	25.0
Condensed milk	20.0	20.0	20.0	20.0
<u>Fat components :</u>				
Vegetable oil	1.0	2.0	30.0	32.0
Lecithin	0.1	0.1	0.6	0.7
Total	100.0	100.0	100.0	100.0

Reference Example 2

A base mixture having the same composition as in Test 6 in Table 3 (Example 2) were charged into an open-pan prior to heating thereof, and sufficiently mixed. It was confirmed that the moisture content of the resulting mixture was 17% by weight. A vegetable oil as in Example 1 and emulsifying agent were added and sufficiently mixed. The homogeneous mixture thus obtained was heated to adjust the moisture content.

Heating was stopped when the temperature of the mixture reached 110°C. The concentrate was transferred to the Sigma-type mixing kneader, where the concentrate was stirred for kneading for same period of time as for Test 6 in the Example 2. Thereafter, the kneaded concentrate was cooled to obtain a soft candy having moisture content of 9.4% by weight.

The resulting soft candy was subjected to Evaluation Test. Result thereof are shown in Table 4, given later.

Evaluation Test

The soft candies obtained by Examples 1 and 2, as well as Reference Examples 1 and 2, were subjected to Sensory Evaluation Test which was carried out by a professional panel of 15 members. Results are shown in following Table 4. As seen from results

given in the Table. the following can be said.

(a) Adhesion to teeth of the sample products for Tests 1 - 3 are apparently lower than the sample product obtained by Reference Example 1. the latter product being produced by a conventional method.

(b) Good evaluation was obtained on sample products for Tests 1 and 2.

(c) The sample product for Test 3 shows a relatively low adhesion to teeth, but absolute product evaluation was given as "ordinary".

(d) The sample product for Test 6 shows higher inhibition against adhesion than the sample product obtained by Reference Example 2 which utilizes a conventional method.

(e) Evaluation on the sample product for Test 4 shows a tendency similar to that of sample product obtained by Reference Example 2. This means that even if a method according to the invention is employed, good evaluation can not be obtained when a content of oil or fat component is less than 2.0 % by weight.

Table 4

	Evaluation on inhibition of adhesion to teeth				
	-2	-1	0	+1	+2
<u>Test :</u>					
1	0	0	0	0	15
2	0	0	0	5	10
3	0	0	14	1	0
4	0	4	11	0	0
5	0	0	9	5	1
6	0	0	0	0	15
<u>Ref. Ex. :</u>					
1	1	12	2	0	0
2	0	5	10	0	0

In the Table, numerals represent numbers of persons, and the score is given by following evaluation standards.

+2 : Excellent.

+1 : Good,

0 : Ordinary,

-1 : Somewhat bad. and

-2 : Bad.

5

Claims:

1. A method of producing a soft candy containing as main components sugar, glucose syrup and an oil or fat, characterised by heating and concentrating a saccharide mixture containing as main components the sugar and glucose syrup to adjust a moisture content thereof to not higher than 10.0% by weight, and then adding to the concentrate the oil or fat in an amount of not less than 2.0% by weight and not more than 30.0% by weight.
2. A method of producing a soft candy, substantially as hereinbefore described with reference to Example 1 or 2 of the invention.
3. Soft candy, whenever produced by a method according to Claim 1 or Claim 2.
4. The features herein described, or their equivalents, in any patentably novel selection.

Patents Act 1977**Examiner's report to the Comptroller under Section 17
(The Search report)** - 10 -Application number
GB 9414755.0**Relevant Technical Fields**(i) UK CI (Ed.M) A2B (BMC13; BMC16; BMC19; BMC3;
BMC6; BMC9; BMC21)

(ii) Int CI (Ed.5) A23G 3/00

Search Examiner
K J KENNETTDate of completion of Search
3 NOVEMBER 1994**Databases (see below)**(i) UK Patent Office collections of GB, EP, WO and US patent
specifications.

(ii) ONLINE DATABASE: WPI

Documents considered relevant
following a search in respect of
Claims :-
1-3**Categories of documents**

- X:** Document indicating lack of novelty or of inventive step. **P:** Document published on or after the declared priority date but before the filing date of the present application.
- Y:** Document indicating lack of inventive step if combined with one or more other documents of the same category. **E:** Patent document published on or after, but with priority date earlier than, the filing date of the present application.
- A:** Document indicating technological background and/or state of the art. **&:** Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages	Relevant to claim(s)
X	US 4097616 (GENERAL FOODS) column 1 lines 51-62	1,3
X	WPI Abstract Accession No 78-71267A/40 & JP 53075361 (KANEBO)	1,3

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